

Heritage Western Cape Guideline for Palaeontological Monitoring of Fossil Finds

A: MONITORING FOR FOSSILS

Palaeontological fossils and fossil traces are legally protected in terms of the National Heritage Resources Act (NHRA No. 25 of 1999). It is an offence to destroy, damage, excavate, alter or remove from its original place, or collect, any palaeontological material or object without a permit from Heritage Western Cape (HWC) in terms of section 35; or in terms of approval of a workplan or other approval by HWC in terms of section 38.

Where palaeontological monitoring of a development is required by HWC, for the protection of fossils or trace fossils, as described in the palaeontological component of a Heritage Impact Assessment section 38 (or, occasionally, section 35), these Guidelines apply.

The palaeontological consultant is expected to ensure that:

- *the field supervisor/foreman and workers involved in digging excavations are informed of the need to watch for potential fossil material and encouraged to learn more about likely finds;*
- *that workers seeing potential objects must understand that they are legally obligated to report to the field supervisor/foreman who, in turn, will report to the ECO or if necessary the Project Manager.*
- *the ECO or person designated as responsible by the palaeontological consultant must inform the archaeologist and/or palaeontologist contracted to be on standby in the case of fossil finds.*

To this end, responsible persons on site must be designated by the consultant palaeontologist and suitably informed. This will include, hierarchically:

- *The field supervisor/foreman, who is going to be most often in the field;*
- *The Environmental Control Officer (ECO) for the project;*
- *The Project Manager.*

The ultimate responsibility for the monitoring program rests with the consultant palaeontologist. However, a regular monitoring presence over the period of the development may not be practical. Thus:

- *Where the likelihood that fossils may occur is high, and the fossils themselves are likely to be of significance the palaeontologist is expected to be responsible for the monitoring program on site.*
- *Where archaeological monitoring of the excavations and earthmoving is already a stipulation in the Archaeological Impact Assessment, the contracted Monitoring Archaeologist (MA) may also be requested to monitor for the presence of fossils and make a field assessment of any material brought to attention. The MA is usually sufficiently informed to identify fossil material and this avoids additional monitoring by a palaeontologist. In shallow coastal excavations, the fossils encountered are usually in an archaeological context. The MA then becomes the responsible field person and fulfils the role of liaison with the palaeontologist and coordinates with the developer and the Environmental Control Officer (ECO). However if fossils are exposed in non-archaeological contexts, the palaeontologist should be summoned to document and sample/collect them.*
- *Where it is unlikely that significant fossil remains will be found the palaeontologist should identify and designate a responsible person involved with the development to report back on any fossil finds.*

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B: FOSSIL FIND PROCEDURES

In each situation the consultant palaeontologist must determine the most appropriate way forward.

In most contexts, ..., it is improbable that fossil finds will require declarations of permanent “no go” zones. At most a temporary pause in activity at a limited locale may be required. The strategy is to rescue the material as quickly as possible. The procedures suggested below must ... be adapted as fits the context.

While different situations pertain in different palaeontological contexts, the sections below cover the most common situations in the Western Cape. They are written ... *in terms of finds of fossil bones that usually occur sparsely, such as in the Langebaan Formation, but they... also serve as a guideline for other sparse fossil material that may occur. Bone finds can be classified as two types: isolated bone finds (see 1. 1) and bone cluster finds (1.2). Fossil shell layers (1.3) are usually fairly extensive and can be easily documented and sampled. The last two sections discuss Recue Excavations (1.4) and the excavation of Major Finds (1.5).*

1.1 ISOLATED BONE FINDS

In the process of earthmoving during development, isolated bones may be spotted in the hole sides or bottom, or as they appear on the spoil heap. By this is meant bones that occur singly, in different parts of the excavation. If the number of distinct bones exceeds 6 pieces, the finds must be treated as a bone cluster (below).

Response by personnel in the event of isolated bone finds

Action 1: *An isolated bone exposed in an excavation or spoil heap must be retrieved before it is covered by further spoil from the excavation and set aside.*

Action 2: *The site foreman and ECO must be informed.*

Action 3: *The responsible field person (site foreman or ECO) must take custody of the fossil.*

The following information to be recorded:

- o *Position (excavation position).*
- o *Depth of find in hole.*
- o *Digital image of hole showing vertical section (side).*
- o *Digital image of fossil.*

Action 4: *The fossil should be placed in a bag (e.g. a Ziplock bag), along with any detached fragments. A label must be included with the date of the find, position information, depth.*

Action 5: *The ECO (or designated responsible person) must inform the developer, the developer must contact the standby archaeologist and/or palaeontologist. The ECO must describe the occurrence and provide images as soon as possible by email.*

Response by Palaeontologist in the event of isolated bone finds

The palaeontologist will assess the information and liaise with the developer and the ECO and a suitable response will be established.

1.2 BONE CLUSTER FINDS

A bone cluster is find of several bones in close proximity or bones resembling part of a skeleton. These bones will likely be seen in broken sections of the sides of the hole and as bones appearing in the bottom of the hole and on the spoil heap.

Response by personnel in the event of a bone cluster find

Action 1: Immediately stop excavation in the vicinity of the potential material. Mark (flag) the position and also any parts of the spoil heap that may contain fossils.

Action 2: Inform the site foreman and the ECO.

Action 3: The ECO (or designated responsible person) must inform the developer, the developer must contact the standby archaeologist and/or palaeontologist. The ECO must describe the occurrence and provide images as soon as possible by email.

Response by Palaeontologist in the event of a bone cluster find

The palaeontologist will assess the information and liaise with the developer and the ECO and a suitable response will be established. It is likely that a Field Assessment by the palaeontologist will be carried out as soon as possible.

It will probably be feasible to "leapfrog" the find and continue the development excavation farther along, or proceed to the next excavation, so that the work schedule is minimally disrupted. The response time/scheduling of the Field Assessment is to be decided in consultation with developer/owner and the environmental consultant.

The field assessment could have the following outcomes:

- i) If the fossils are in palaeontological context, the palaeontologist must evaluate the site and decide if Rescue Excavation is feasible, or if it is a Major Find;
- ii) If the fossils are in an archaeological context, an archaeologist must be contacted to evaluate the site and decide if Rescue Excavation is feasible, or if it is a Major Find;
- iii) If a human burial, the archaeologist and Heritage Western Cape must be informed immediately.

1.3 EXPOSURE OF FOSSIL SHELL BEDS

Response by personnel in the event of intersection of fossil shell beds

Action 1: The site foreman and ECO must be informed.

Action 2: The responsible field person (site foreman or ECO) must record the following information:

- o Position (excavation position);
- o Depth of find in hole;
- o Digital image of hole showing vertical section (side);
- o Digital images of the fossiliferous material.

Action 3: A generous quantity of the material containing the fossils should be stockpiled near the site, for later examination and sampling.

Action 4: The ECO (or designated responsible person) must inform the developer, the developer must contact the standby archaeologist and/or palaeontologist. The ECO must describe the occurrence and provide images as soon as possible by email.

Response by Palaeontologist in the event of fossil shell bed finds

The palaeontologist will assess the information and liaise with the developer and the ECO and a suitable response will be establish

1.4 RESCUE EXCAVATION

Rescue Excavation refers to the ‘emergency’ removal of the material exposed during earthmoving for the development. This would apply if the amount or significance of the exposed material appears to be relatively circumscribed and it is feasible to remove it without compromising contextual data. The time span for Rescue Excavation should be reasonably rapid to avoid any or undue delays, e.g. 1-3 days and definitely less than 1 week. In principle, the strategy during mitigation is to “rescue” the fossil material as quickly as possible. The strategy to be adopted depends on the nature of the occurrence, particularly the density of the fossils. The methods of collection would depend on the preservation or fragility of the fossils and whether in loose or in lithified sediment. These could include:

On-site selection and sieving in the case of robust material in sand. Fragile material in loose/crumby sediment would be encased in blocks using Plaster-of Paris or reinforced mortar. If the fossil occurrence is dense and is assessed to be a “Major Find”, then carefully controlled excavation is required.

1.5 MAJOR FINDS

A Major Find is the occurrence of material that, by virtue of quantity, importance and time constraints, cannot be feasibly rescued without compromise of detailed material recovery and contextual observations. Major Finds occur very seldom.

Management Options for Major Finds

In consultation with developer/owner and the environmental consultant, the following options should be considered when deciding on how to proceed in the event of a Major Find.

Option 1: Avoidance

Avoidance of the major find through project redesign or relocation. This ensures minimal impact to the site and is the preferred option from a heritage resource management perspective. When feasible, it can also be the least expensive option from a construction perspective. The find site will require site protection measures, such as erecting fencing or barricades.

Alternatively, the exposed finds can be stabilized and the site refilled or capped. The latter is preferred if excavation of the find will be delayed substantially or indefinitely. Appropriate protection measures should be identified on a site-specific basis and in wider consultation with the heritage and scientific communities. This option is preferred as it will allow the later excavation of the finds with due scientific care and diligence.

Option 2: Emergency Excavation

Emergency excavation refers to the “no option” situation wherein avoidance is not feasible due to design, financial and time constraints. It can delay construction and emergency excavation itself will take place under tight time constraints, with the potential for irrevocable compromise of scientific quality.

It could involve the removal of a large, disturbed sample by excavator and conveying this by truck from the immediate site to a suitable place for “stockpiling”. This material could then be processed later. Consequently, emergency excavation is not a preferred option for a Major Find.

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Source:

Pether, J. 25 October 2014. Palaeontological Impact Assessment, Desktop Study. Proposed Development of The Sixteen Mile Beach Coastal Estate. Portion of Portion 20 of Farm No. 560, Yzerfontein Western Cape. IN: Orton J. 7 Dec 2014/ 27 May 2015. Heritage Impact Assessment for The Proposed Sixteen Mile Beach Coastal Estate, Malmesbury Magisterial District, Western Cape.

This Guideline is based on the fossil finds procedures developed over the last decade by Dr J Pether